

China vs. The Rest: A New Era of Global Energy Dealmaking

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ABSTRACT

China's recent global energy policy suggests an acquisitive attitude to deal-making, coming as it does fourteen years after a failed high profile 2005 bid for the U.S. giant Unocal. Our study of 726 global oil and gas mergers and acquisitions for the period 2006 to 2012 reveals that by entering risky oil regions, China is executing deals globally and doing them (relatively) well. By median, Chinese state backed energy giants paid 6.5 percent less than comparable energy dealmakers. Findings suggest that by undertaking deals in risky countries, typically those with high trade barriers to entry and significant political risk, China achieves observably more favourable deal pricing terms, achieving acquisitions at significant discount.

Keywords: Reserve acquisitions, Bid discount, Oil and gas, Mergers and acquisitions

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1. INTRODUCTION

China's energy policy is increasingly playing an pivotal role in shaping global energy markets as well as corporate merger and acquisition prices (Mu and Ye, 2011). Our findings suggest that China seems to have learned from their high profile failure to acquire U.S. company Unocal in 2005 (Wan and Wong, 2009) and is now reviving an interest in global deal-making. Chinese companies acquired more than ten percent of global reserves sold over the period 2006–2012, enjoying some deal pricing success in the process. In particular, prior studies of deal attributes suggest that China employs various approaches to command discounts in transactions; executing oil for loans at a country level in state deals, or cash for equity acquisitions in private deals, closing strategic acquisitions to their advantage (Zhang, 2012). The broader suggestion of Chinese 'Petronationalism', is that her acquisitions are driven not by commercial interests, but by a desire for energy security (Griffin, 2015). The dual commercial and security implications of China's energy dealmaking serve to make this an interesting policy research area. In this paper we, therefore, focus on Chinese merger and acquisition prices.

We are interested in *where* China acquires reserves and whether it does so at competitive prices. Analytical insights from 726 deals over a seven year period from 2006–2012 signal a reshaping of global reserve ownership. We note that China (competing side by side with other companies) achieves a relative discount in most oil producing regions, by median, Chinese prices are closed a full 6.5 percent lower than comparable deals. This deal insight is relevant since it shows that while

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China's state investment arm has historically acquired reserves for security, they seem not to be overpaying (Sun et al., 2014). On the contrary, other sector players seem to be paying (relative) premium prices. We also find that China is becoming a global player in oil and gas reserve ownership, but with Chinese state companies exhibiting a distinctly greater country risk appetite than commercial competitors.

The 'bid discount' metric we use focuses on the relative bid price of all buyers (Chinese and non-Chinese) compared to a simplified computed value for in-the-ground acquired reserves. We acknowledge that this may be viewed as an oversimplification since oil and gas valuation is a complex multivariate process. Reserve acquisitions are typically closed at a value less than the full reserve value on the market (by a statistically significant margin) due to many factors: the reserve production profile, time value of money, taxation, production sharing terms and development costs are but a few of these. Full valuation is also highly idiosyncratic by region, geological reservoir complexity and fiscal terms. Kretzschmar et al. (2008) model 292 oilfields across developed and emerging market producers, finding that these factors may generate a risk and return inversion. In addition, size of reservoir also plays a role in valuation, Kretzschmar and Moles (2006) specifically model oilfield real options and note that volatility—and therefore option value—depends on the field size idiosyncracies. Notwithstanding the above complexities of valuation, practitioners do use simplified in-the-ground reserve values. This approach while reasonably simple, enables a focus on the relative discount between value of reserves and purchase price. Useful insights are provided using this approach, particularly where a sample has sufficient regional transactions to enable us to compare cross sectional prices between buyer groups, an approach we adopt in this paper.

Some authors have studied *when* deals were executed, noting that in the period post 2008, when Western credit lines were tight, China closed deals backed by low cost Chinese funding (Sun et al., 2014). Specifically, over this period The China Development Bank (CDB) extended lines of credit totalling around 65 billion to energy companies and governments in Brazil, Ecuador, Russia, Turkmenistan, and Venezuela. In turn, loans were repaid in physical oil (Meidan, 2016). By 2015, the lending had already made progress toward achieving China's primary goals: 1.4–1.6 million barrels per day in oil flowed to China, building their strategic reserves, investing heavily in new riskier production provinces. Other studies have suggested *why* deals were so important: firstly, they increase China's energy security (Griffin, 2015), but in addition, the effect is to reduce Chinese spot market exposure. An increased Chinese ability to produce 'off market' oil from new oil partnerships reduces China's spot market exposure and also enables China to sell into forward and option derivative markets (thereby hedging price risk on domestic oil purchases closer to home). This latter process serves the purpose of hedging Chinese exposure to volatile spot markets while limiting the feedback volatility of Chinese purchases on spot markets, an effect noted by Li and Leung (2011).

By contrast with the above studies, this paper focusses on the risk metric of *where* the Chinese reserves were acquired, and then whether the prices paid were '*good business*'. Across 726 deals over the period, we find a positive relationship between reserve size and bid discount, meaning the larger the reserve, the lower the bid price (per barrel). For the whole sample, we find that political risk is directly and positively related to bid discount, supporting the intuition that the higher the political risk, the higher the discount, the lower the bid price. Despite the discounts enjoyed in risky production provinces, when comparing China to global deal trends, we find that an important dealmaking region for China was North America, comprising approximately 31 percent of deals (measured by reserve size).

North American deals are closed at the lowest *Chinese* discount. This suggests that China is less able to achieve a relative discount in developed capital markets. At the other end of the country

risk spectrum, for example Russian markets, China achieved the highest bid discounts. In fact, oil in-the-ground in Russia and Kazakhstan are shown to be worth significantly less than elsewhere, consistent with early work by Smith (1995). Despite achieving the lowest discounts in the U.S. and Canada, value-adding deals do still occur since targeted Western companies provide Chinese access to technology and new production assets. In particular technical oil sands expertise was an attribute noted as a central driver of the highly contentious Chinese acquisition of Nexen.

There are numerous studies on the effect of risk and equity returns, however, no studies really seem to focus on buyer risk characteristics in reviewing deal value or discounts. Erb et al. (1996) utilize four measures from the *International Country Risk Guide's* political-, financial-, economic- and composite risk indexes and one metric from *Institutional Investor's* country credit ratings to demonstrate that country-risk measures are correlated with equity returns and, in turn, with equity valuation. Kretzschmar and Kirchner (2009) provide market evidence of the effects of reserve location on oil and gas company returns by adding a proxy—the proportion of oilfield assets subject to progressive tax terms—to the classic Fama-French framework. They find companies with oilfield assets owned under progressive production sharing contracts are unable to capture the benefits of oil price increases, and as a result, significantly under-perform companies with concession holdings, and that these returns vary by production region (Kretzschmar et al., 2008).

Glick and Weiner (2007) come close to investigating the effect of risk on the value of crude oil reserves. Controlling for factors that affect reserve value, they demonstrate value-destruction from political risk, and estimate the asset discount across 37 countries, showing that the discount depends on market conditions. Specifically, the higher the expected future market prices of oil and gas, the larger the discount, regardless of a country's level of risk. This paper seeks to add to their work by answering the questions as to *where* reserves are acquired and whether they are 'good value'. We conclude that China has a high country risk appetite which helps achieve a higher deal discount in those risky regions.

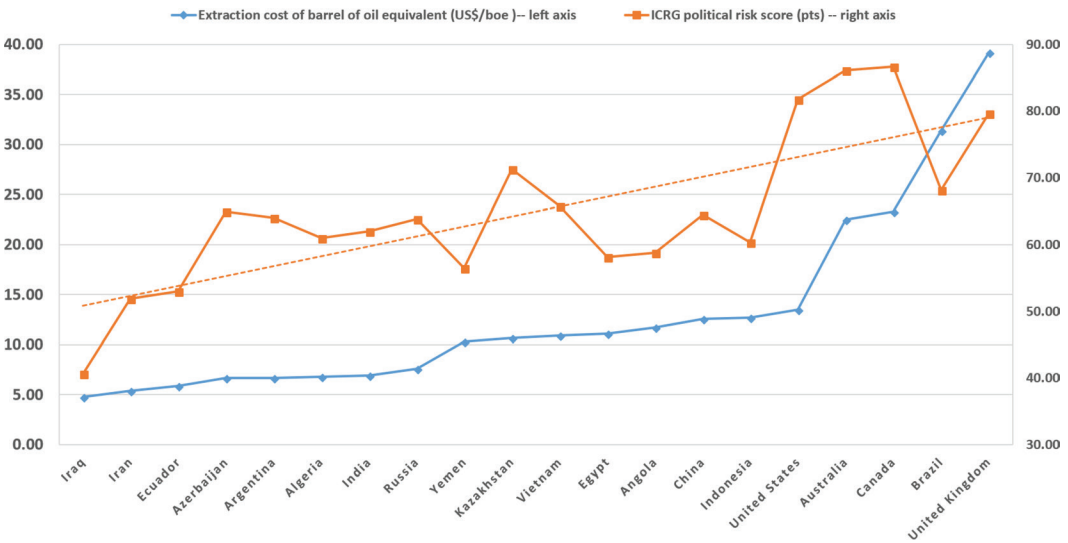
2. METHODOLOGY

2.1 Defining Bid Discount

As noted earlier, valuation is a complex process, containing technical and market risk elements. Proven and probable reserves are usually analysed to ascertain annual production profiles, with the production multiplied by a forward 'price deck', in projecting revenue. From the gross revenue, lifting costs, taxation, operating expenses and development costs are deducted and then discounted for the time value of money (the oil market convention is to use 10 percent as the discount rate). To achieve an accurate value, detailed valuation models are constructed. However, to simplify the above, oilmen reference an 'oil in-the-ground' value, enabling a simplified estimation of value—it is this approach we use.

Subsurface reserve acquisitions are typically closed at values less than the full reserve value on the market as bid price and the full reserve value as ask price, we term the spread between bid price and ask price as *bid ask spread*. It is, of course, noteworthy, that the operational synergies may be usually considered and realized in corporate takeovers, however such synergies are less attainable in oil and gas because of location specific factors. Thus, the more dependent firm cash flows are on production assets, the more they are able to realize synergy gains (if they acquire adjacent assets and benefit from joint development blocs). This possible rationale for paying a premium noted by Ng and Donker (2013) is not modeled in relation to the size of the discount.

Figure 1: Extraction Cost of a Barrel of Oil Equivalent and Country Risk



Notes: This figure illustrates extraction cost of a barrel of oil equivalent and corresponding ICRG country political risk score picked up from our sample of global deals. Extraction cost (blue line) is measured by US\$/boe on the left vertical axis, and risk score (orange line) is measured by points on the right vertical axis. The orange dash line represents the linear trend of risk scores. Based on ICRG rule, the lower the risk score, the higher the risk, and vice versa. It is clear from the figure that in general global extraction costs tend to be lower in higher risk regions such as Iraq, Iran and Russia, and higher in lower risk countries like the U.K., Canada and Australia. (Extraction cost data are retrieved from Knoema).

Kretschmar et al. (2008) examine global risk return inversion using detailed valuation models for 292 oilfields. Their global study concludes that fiscal terms and extraction costs and development costs affect deal pricing differentially across the globe. Our cross sectional study enables us to compare transactions side by side and conclude that Chinese companies take advantage of high country risk to close deals across risky oil producing regions, at a discount (The findings by Kretschmar et al. (2008) are corroborated in Figure 1 which reflects extraction cost per barrel of oil equivalent and the corresponding country risk in our sample, further details can be retrieved from Knoema¹).

$$Bid\ ask\ spread = RV - deal\ value \tag{1}$$

For a deal containing both oil and gas reserves,² the ask price *RV* is defined as:

$$\begin{aligned} RV &= ORV + GRV \\ &= Oil\ reserve \times oil\ market\ price + gas\ reserve \times gas\ market\ price \end{aligned} \tag{2}$$

We use the term *bid discount* to measure the discount percentage range of bid price on the full computed ask price:

$$Bid\ discount = \frac{bid\ ask\ spread}{RV} \tag{3}$$

1. <https://knoema.com/rqaebad/cost-of-producing-a-barrel-of-crude-oil-by-country#>
 2. We use 2P (proven and probable) reserves of both oil and gas for all calculations.

To compare *bid ask spread* at deal-to-deal basis, we convert values in Equation 1 and 2 into values at per barrel of oil equivalent basis:

$$(\text{Bid ask spread})_{boe} = \frac{\text{bid ask spread}}{\text{total reserve size}} \quad (4)$$

$$(\text{Ask price})_{boe} = \frac{RV}{\text{total reserve size}} \quad (5)$$

And we add:

$$(\text{Bid price})_{boe} = \frac{\text{deal value}}{\text{total reserve size}} \quad (6)$$

By dividing deals into a Chinese buyers group versus a non-Chinese buyers group by region, we examine whether Chinese buyers consistently outbid non-Chinese buyers in global oil and gas deals in comparable regions. Since the benchmark oil and gas prices are fixed for all deals at a defined deal date, higher bid prices would lead to relatively lower bid discount. Our proposition is that Chinese buyers bid in more risky countries thereby paying less than non-Chinese buyers. This backdrop provides interesting insights into the Chinese effect on risk-return payoff in the context of M&A in O&G industry. We test this proposition by constructing group comparisons of bid discount, ICRG risk scores, cash payment percent, and buyer's state ownership based on nonparametric Mann-Whitney test (Mann and Whitney, 1947).

2.2 Determinants of Bid Discount

Following valuation literature principles, from both energy finance and corporate finance, we propose a regression model to examine the determinants of bid discount:

$$\begin{aligned} \text{Bid discount} = \alpha &+ \beta_1 \times (\text{market factors}) \\ &+ \beta_2 \times (\text{risk reserve metrics}) \\ &+ \beta_3 \times (\text{deal specific attributes}) + \varepsilon \end{aligned} \quad (7)$$

Market factors represent oil and gas market prices, as mentioned in the Data Section, we employ the NYMEX fourth nearest futures contract price RCLC4 and RNGC4 as proxy respectively. We deem that for valuation of long term commodity reserves in M&A, spot prices are too volatile. The use of futures prices with maturity longer than a year lack liquidity, so, consistent with Kretzschmar (2007), we use the longer dated futures price maturing around 4 to 6 months as a market metric.

Risk reserve metrics are used to proxy the risk and reserve relationship. In this paper, in addition to the ICRG framework proposed by Erb et al. (1996), we introduce a 2P reserve 'size dimension' to combine with ICRG risk scores. This provides a composite: PR(political risk)-FR(financial risk)-ER(economic risk)-Size regression loading structure in analyzing each deal in our sample. We deem this four metric structure a better indicator than the CR(composite risk)-Size structure because consistent with Glick and Weiner (2007) each risk subcategory would exert heterogeneous effect on the bid discount.

We recognize four deal specific attributes: the oil reserve as a percentage of total reserve size, the cash paid as a percentage of total deal value, a deal type dummy variable indicating whether

the deal is buying shares or directly buying oil or gas field assets, and buyer's state ownership (BSO)—indicating whether and by how much percentage the acquiring company is controlled by a state. We distinguish between oil and gas reserves, since, as noted by Erdos (2012), oil and natural gas prices decoupled around 2009 in North America due to commercial application of fracking technology and the shale gas production boom. This led to systematically localised prices of gas assets compared to, say, oil assets.

$$\text{Oil pct} = \frac{\text{oil reserve}}{\text{total reserve size}} \quad (8)$$

The choice of payment strategies in commodity M&A depends on the relative bargaining power of the bidder and the target and is therefore transaction specific, and may influence the pricing of the deal. Eckbo (2009) summarizes a number of economic hypotheses and related empirical evidence concerning the choice of a specific payment method, including tax effects, deal financing costs, agency and corporate control motives and behavioral agency conflicts. We therefore include a cash deal variable defined as:

$$\text{Cash pct} = \frac{\text{deal cash}}{\text{deal value}} \quad (9)$$

In terms of deal transaction type, Browne (2009, 2010) discuss the issue from tax burden perspective: in an asset purchase transaction the bidder can pick and choose the liabilities to assume, while in an equity purchase transaction all of target's liabilities will remain with the company. There are almost infinite alternative transaction structures from the two basic (asset vs. equity) structures, with payment according to both bidder and seller's negotiating positions. Each of the finance structures naturally lead to different economic outcomes for both bidder and seller. Wise (2001, 2004) argue for example that many liabilities are discovered only after the deal is completed (even if due diligence is conducted in advance). Based on the above points, we model the deal type (shares vs. assets acquisition) as a simple dummy variable. Unlike industrial convention, slicing energy companies into national versus international companies—by those with fifty percent state control, we are able to employ a more precise indicator, the buyer's state ownership to examine the state support effect on bid discount.

By modelling our sample of global deals in Model 7, we examine how global bid discounts are determined by and correlated to these factors. In addition, by including a buyer type dummy variable to distinguish deals closed by Chinese and non-Chinese buyers, we are able to identify the bid discount gap caught by the pure 'China effect'.

To test the robustness of the causal relationships between bid discount and determinants in Model 7, we incorporate two variations. The first is an oil cycle indicator reflecting whether oil price is in the bull area or bear cycle. We use this indicator to control for macroeconomic cycles. Based on NYMEX daily futures price RCLC4, We define a bear indicator as a minimum 20 percent drop from a latest high watermark of oil price. The consecutive period between the latest high watermark price and the lowest price is recorded as a bear period. We then add all bear periods together as the oil recession period for the period 2006 to 2012, and define positive mean reversion periods as oil bull periods. Considering unobserved (time) heterogeneity, in addition to the oil cycle indicator, we also divide the whole sample into seven periods, based purely on the calendar years, to capture possible time fixed-effects.

The second variation introduced is a regional indicator based on the primary reserve region of each deal. We divide the whole sample of deals into ten regions including Africa, Asia, Australia,

Former Soviet Union, Gulf of Mexico, North America excluding Gulf of Mexico, Middle East, North Sea, Europe excluding North Sea and South/Central America. By incorporating the regional indicator, we control for geographical risk idiosyncrasies.

As possible endogeneity may limit the causal relationships interpreted by our model, we introduce IEF, the *Index of Economic Freedom*,³ as an instrumental variable for the risk factor in O&G takeovers. As defined: ‘individuals and entities are free to work, produce, consume, and invest in any way they please in an economically free society’, we assume that a high economic freedom will facilitate takeover activities no matter in O&G or any other segments. As economic freedom increase, the trade friction and transaction cost between buyer and seller would decline, risk premia of investments would become diminishing, leading to higher deal price and lower bid discount.

3. DATA

Generally stated, the oilfield data used in this paper comprise three components: deal value and reserve size for each deal as well as transaction composition (cash or equity). We exclude deals without these metrics. Since scale of reserve size is a key indicator for standardising reserve acquisitions, we also exclude deals with reserve size below 8 million barrel of oil equivalent. The commercial global oil and gas M&A database⁴ is used to provide deal by deal insights into acquisitions, including announcement date, buyer(s), seller(s), deal value, primary reserve country, reserve size, transaction type (equity or asset deal), oil reserve percent, and deal cash percentage. The full database contains more than 13,000 deals for the period commencing 1999, after applying the filters noted above and excluding deals with top and bottom 1.5 percent bid discount values, 726 deals remain.

The reason for excluding deals prior to 2006 is that earliest deals with Chinese buyers were especially opaque and the first recorded in the database in 2006. We therefore exclude all deals prior to 2006. We lift out a stratified sample of 726 deals, of which, 42 were closed by Chinese buyers (Table 1). It is clear from a review of the Chinese deals that North American IOCs might have been targeted, primarily by the state companies of CNPC (PetroChina), Sinopec and CNOOC. An *ex post* rationale may be that in these early days, even though these deals might require a premium, they would give China access to North American expertise and techniques, hence the early emphasis by China on U.S. and Canadian companies, culminating in the Nexen deal in 2012. Many Chinese deals—where loans for oil are made—do not result in direct acquisitions. These deal terms are often opaque and difficult to include in our framework.

To understand how much of a premium was paid on the included deals, we place the Chinese deals into global context by extracting the full sample of 726 deals worldwide over the same period—grouped by Chinese buyers and non-Chinese buyer deals (Table 2). From a preliminary data analysis some trends are already apparent: China closed 5.8 percent of all deals (by number) but these resulted in a purchase of around 10 percent of reserves—but for 12.4 percent of value. i.e. China closed a few deals—but for large volume and value. A further comparison between Panel B and C clearly indicates that both median (85.24%) and average value (80.87%) of bid discounts of Chinese deals are significantly greater than those of non-Chinese deals (78.77% and 76.88% respectively).

To reflect regional variations, we extend Table 2 into more detailed Table 6 and 7 with regional breakdowns in the end of the paper, in which, Table 6 is based on total-median values and

3. <https://www.heritage.org/index/>

4. <https://www.plsx.com/ma/>

Table 1: List of Deals with Chinese Buyers

Announce Date	Buyer(s)	Seller(s)	Deal Value (MMS)	Res Size (MMBOE)	Bid Disc't (/BOE)
01-08-2006	CNOOC	South Atlantic	2,268.00	345.00	89.74%
06-20-2006	Rosneft, Sinopec	TNK-BP	3,223.00	1,009.50	95.47%
09-21-2006	ONGC, Sinopec	Omimex	850.00	161.80	91.80%
10-25-2006	Citic Group	Nations Energy Co Ltd	1,910.00	414.70	92.92%
02-02-2007	Sinochem	Undisclosed Seller	218.00	15.40	76.84%
02-04-2008	Sinochem	SOCO	465.00	29.90	82.68%
03-07-2008	Sinopec	AED Oil Pty Ltd	561.00	60.00	90.88%
04-17-2008	CNOOC	Husky Energy	125.00	54.40	96.97%
08-27-2008	PetroChina	CNPC	972.10	89.00	90.45%
09-25-2008	Sinopec	Tanganyika Oil Co	1,997.20	851.40	97.81%
03-31-2009	CNOOC, Sinopec	Talisman	304.28	57.60	82.28%
06-24-2009	Sinopec	Addax Petroleum Ltd	8,544.20	536.70	77.53%
07-17-2009	CNOOC, Sinopec	Marathon	1,300.00	130.00	85.09%
08-12-2009	Sinochem	Emerald Energy	829.10	56.70	80.30%
09-30-2009	China Investment Corp	KazMunaiGas EP	495.66	234.63	97.05%
03-08-2010	Shell, PetroChina	Arrow Energy NL	3,448.11	579.94	79.69%
03-13-2010	CNOOC	Bridas	3,100.00	318.00	84.24%
03-28-2010	Sinopec (Listed)	Sinopec	2,457.00	130.90	76.92%
04-12-2010	Sinopec	ConocoPhillips	4,650.00	457.15	88.34%
04-30-2010	CNOOC	Devon Energy	515.00	16.00	64.40%
05-21-2010	Sinochem	Statoil	3,070.00	182.80	77.17%
06-18-2010	Sinopec	Hupecol	281.00	11.10	67.25%
11-28-2010	Bridas, CNOOC	BP	7,060.00	858.00	86.93%
12-02-2010	Sinopec	Chevron	680.00	154.98	86.58%
12-10-2010	Sinopec	Oxy	2,450.00	393.00	92.19%
12-31-2010	China Sonangol Intl Holding Ltd	Total	983.37	24.50	57.03%
02-09-2011	PetroChina	EnCana	5,451.25	235.29	10.78%
02-14-2011	MIE Holdings Corp	BMB Munai Inc	170.00	92.24	97.88%
02-25-2011	Sinopec	Origin Energy, ConocoPhillips	1,500.00	239.12	75.72%
05-25-2011	Sinopec	Shell	538.00	35.90	85.39%
07-20-2011	CNOOC	OPTI Canada Inc	2,075.50	339.00	93.83%
08-08-2011	China Investment Corp	Gaz de France	4,297.00	244.50	56.25%
08-22-2011	Shell, PetroChina	Bow Energy Ltd	429.88	37.41	55.86%
10-09-2011	Sinopec	Daylight Energy Ltd	2,873.95	173.86	61.22%
11-11-2011	Brightoil Petroleum Group	Win Business Petroleum	75.00	13.25	80.11%
11-11-2011	Sinopec	Galp Energia	5,190.00	133.06	56.43%
12-12-2011	Sinopec	Origin Energy, ConocoPhillips	1,100.00	185.06	71.24%
01-03-2012	PetroChina	Athabasca Oil Sands Corp	667.04	113.92	94.34%
05-23-2012	Hong Kong & China Gas Company	Pan Orient Energy Corp	162.00	18.20	90.20%
07-23-2012	Sinopec	Talisman	1,500.00	223.38	90.39%
07-23-2012	CNOOC	Nexen	17,900.00	2,293.50	92.10%
08-01-2012	PetroChina	Molopo Energy Ltd	43.11	53.59	96.31%

Note: 'Res Size' stands for reserve size, 'Bid Disc't' stands for bid discount.

Table 7 is based on total-mean values. Back to Panel A, the Middle East with around 40 percent of global oil attracted only 1.6 percent of deal interest (by reserve size). This suggests a trend which is becoming increasingly apparent: new provinces and new fracking technologies are making other regions extremely attractive to global players. The largest dealmaking region by reserve size was the Former Soviet Union (FSU) with 52 percent of global deals—in part this is skewed by the BP/Rosneft deal. It is however notable that the bid discount of 94 percent (in Table 6) was also the greatest.

The second major challenge in analysing deal discounts is to link acquisition deal specifics with multivariate macro and micro risk factors. To facilitate this link, the International Country Risk

Table 2: Deal Statistics and Bid Discounts

	Total Deal Count	Total Reserve Size (MMBOE)	Total Deal Value (MM\$)	Total Reserve Value (MM\$)	Bid Price (\$/BOE)	Ask Price (\$/BOE)	B/A Spread (\$/BOE)	Bid Discount (/BOE)
Panel A: All Deals in the Sample								
Total	726 (100.00%)	115,354.56 (100.00%)	779,120.18 (100.00%)	7,199,524.64 (100.00%)	11.03	60.90	46.08	79.13%
Median Value					12.87	61.60	48.73	77.11%
Mean Value								
Panel B: Deals with Chinese Buyers								
Total	42 (5.79%)	11,604.39 (10.06%)	96,729.75 (12.42%)	823,002.20 (11.43%)	8.56	72.63	57.86	85.24%
Median Value					11.40	68.29	56.89	80.87%
Mean Value								
Panel C: Deals with Non-Chinese Buyers								
Total	684 (94.21%)	103,750.17 (89.94%)	682,390.43 (87.58%)	6,376,522.44 (88.57%)	11.22	59.88	45.58	78.77%
Median Value					12.96	61.19	48.23	76.88%
Mean Value								
Mann-Whitney U Tests Comparing Deals with Chinese buyers (Panel B) and Non-Chinese Buyers (Panel C)								
Z Statistic								2.425**
p-Value								0.015

***, **, * indicate 99%, 95%, and 90% significance level respectively.

Table 3: Risk, Cash Payment and Buyer's State Ownership

	Total Deal Count	ICRG Political Risk (Pts)	ICRG Financial Risk (Pts)	ICRG Economic Risk (Pts)	ICRG Composite Risk (Pts)	Cash Payment (%)	Buyer's State Ownership (%)
Panel A: All Deals in the Sample							
Total	726						
Median Value		81.79	36.50	38.13	76.25	100.00	0.00
Mean Value		78.23	37.36	37.67	76.63	82.99	12.66
Panel B: Deals with Chinese Buyers							
Total	42						
Median Value		67.81	39.79	38.00	74.34	100.00	86.20
Mean Value		69.92	40.39	37.52	73.91	95.12	79.30
Panel C: Deals with Non-Chinese Buyers							
Total	684						
Median Value		81.79	36.50	38.33	76.25	100.00	0.00
Mean Value		78.74	37.17	37.68	76.79	82.25	8.57
Mann-Whitney U Tests Comparing Deals with Chinese buyers (Panel B) and Non-Chinese Buyers (Panel C)							
Z Statistic		-3.783***	4.203***	0.375	-2.463**	1.650*	13.902***
p-Value		0.000	0.000	0.708	0.014	0.099	0.000

***, **, * indicate 99%, 95%, and 90% significance level respectively.

Guide (ICRG) published by PRS Group⁵ is used to calculate and allocate international country risk to each deal based on the primary host country (where reserves are located). The ICRG classification include 22 components in three subcategories of risk: political, financial, and economic.

Methodologically, an index is created for each subcategory where Political Risk Index is based on 100 points, the Financial Risk Index carries a weight of 50 points while an Economic Risk Index also weighted at 50 points. The three indices are converted to a Composite Risk Index out of 100 points—using the aggregate score of (PR + FR + ER) times 0.5—where 80.0 to 100.0 is considered to be Very Low Risk, while 0.0 to 49.9 is considered to be Very High Risk. The basic rule of ICRG is clear, the higher the score, the lower the risk, and vice versa.

Similarly we compare bid discounts between Chinese and non-Chinese groups, we further compare the risk indices scores, cash payment percentage and buyer's state ownership⁶ to examine consistency between the variables. As shown in Table 3, both political and composite risk scores for Chinese group (67.81 and 74.34 by median) are significant smaller than those of non-Chinese group (81.79 and 76.25 by median), indicating Chinese deals were politically riskier than non-Chinese deals, and such political risk dominates economic and financial risk. In terms of cash payment, it is also clear that Chinese companies paid more cash (95.12% by average) to close deals than non-Chinese companies (82.25% by average), and the difference is significant. The comparison in buyer's state ownership corroborates that Chinese companies are mainly state owned (86.20% by median and 79.30% by average), and non-Chinese companies are generally private (0.00% by median and 8.57% by average).

When reading Table 2 with Table 3, these reflect a pattern that bid discounts of Chinese buyers are significantly greater than those of non-Chinese buyers, and such greater discount are consistent with higher risk appetite, higher cash payment and more state support. Table 8 and 9

5. <https://www.prsgroup.com>

6. The company's state ownership data are mainly from <EIG Top 100: Ranking The World's Oil Companies 2011>, for those uncovered by the report, we handpick data from the companies' websites.

Table 4: Descriptive Statistics of Variables

Variable	Obs	Mean	StdDev	Min	1-Quar	Median	3-Quar	Max
Bid Discount (%/BOE)	726	77.11	15.19	5.41	71.14	79.13	87.27	98.38
RCLC4 (\$/BBL)	726	86.47	18.07	45.30	74.54	85.06	97.50	146.43
RNGC4 (\$/MMBtu)	726	5.89	2.44	2.24	4.24	4.92	7.78	13.98
ICRG PR (Pts)	726	78.23	10.39	41.17	77.42	81.79	85.83	88.83
ICRG FR (Pts)	726	37.36	4.62	28.08	33.17	36.50	40.04	49.00
ICRG ER (Pts)	726	37.67	3.83	25.83	36.00	38.13	39.25	48.00
ICRG CR (Pts)	726	76.63	5.96	54.96	73.79	76.25	81.13	92.00
Reserve Size (MMBOE)	726	158.89	864.06	8.00	15.28	29.39	74.70	14,984.00
Deal Value (\$MM)	726	1,073.17	2,978.71	16.00	169.90	344.51	800.00	41,000.00
Reserve Value (\$MM)	726	9,916.70	63,434.67	171.18	860.01	1,684.19	4,189.28	1,154,699.92
Bid Price (\$/BOE)	726	12.87	8.32	0.64	6.78	11.03	16.92	57.89
Ask Price (\$/BOE)	726	61.60	23.73	14.38	45.37	60.90	77.35	137.46
Reserve Oil Size (MMBBL)	726	91.76	662.41	0.00	3.00	11.40	30.80	12,097.00
Reserve Gas Size (Bcf)	726	402.37	1,735.61	0.00	10.23	66.92	193.66	27,090.00
Oil Pct (%)	726	50.25	38.36	0.00	10.03	48.74	90.23	100.00
Deal Cash Value (\$MM)	726	870.43	1,981.01	1.10	148.50	301.25	747.50	28,000.00
Cash Pct (%)	726	82.99	33.38	0.00	92.64	100.00	100.00	100.00
Deal Type (1-shares; 0-assets)	726	0.33	0.47	0.00	0.00	0.00	1.00	1.00
Buyer's State Ownership (%)	726	12.66	30.94	0.00	0.00	0.00	0.00	100.00
Buyer Type (1-China; 0-Rest)	726	0.06	0.23	0.00	0.00	0.00	0.00	1.00

are extended from Table 3, incorporating detailed regional breakdown of median and mean value respectively.

4. RESULTS

Based on our regression Model 7, Table 4 includes descriptive statistics of variables, and Table 5 includes regression results of bid discount on determinants. As reflected in Panel A Table 5, for global deals as a whole, most variables included in the regression models demonstrate significant correlation with the dependent variable, bid discount (with the notable exception of financial risk, economic risk, cash percentage and buyer's state ownership). Results show clearly that the higher market prices of both oil and gas lead to higher bid discount, while higher political risk (or in the case of our data: lower PR score) and reserve size all lead to higher bid discount. It is notable that in terms of deal specific characteristic, a higher oil percentage leads to higher bid discount. As far as deal and financing attribute is concerned, equity takeovers lead to a lower bid discount comparing to outright oilfield asset buying. The adjusted R squared value for this model is 0.18.

In Panel B Table 5, we replace separated PR, FR and ER scores with the synthetic composite risk score (CR), the regression model reveals generally consistent results with those in Panel A, especially 1 percent increase in composite risk score leads to about 0.2 percent decrease in bid discount, reflecting that political risk dominates both financial and economic risk in determining bid discount.

To test the robustness of the causal relationships reflected in Panel A and B, we divide the whole sample into ten subgroups based on the variation of primary reserve regions of each deal including Africa, Asia, Australia, Former Soviet Union, Gulf of Mexico, North America excluding Gulf of Mexico, Middle East, North Sea, Europe excluding North Sea and South/Central America. By incorporating the regional indicator, we control for geographical risk idiosyncrasies. Due to the sample size is only 11 and 5 for Middle East and Europe excluding North Sea, we leave them un-regressed. For the remaining eight regions, we run regression based on Model 7 using separated PR, FR and ER scores and put results in Panel C Table 5. Although results show different loadings and

Table 5: Regression Results of Bid Discount on Determinants (Part 1)

Reg	Obs	Cons	LnOP	LnGP	LnRes	LnPR	LnFR	LnER	LnCR	Opct	Cpct	DT-S	BSO	Adj R ²	F-stat
Panel A: All Deals (Based on model with separated PR, FR and ER)															
GL	726	0.722 (0.300)	0.071*** (0.025)	0.026* (0.015)	0.017*** (0.005)	-0.149*** (0.042)	0.087 (0.054)	-0.028 (0.065)	0.124*** (0.014)	0.010 (0.020)	-0.028** (0.014)	-0.023 (0.018)	0.186 (0.018)	17.593***	
Panel B: All Deals (Based on model with synthetic CR)															
GL	726	1.184 (0.320)	0.073*** (0.025)	0.025* (0.013)	0.020*** (0.005)	-0.212*** (0.067)	0.138*** (0.014)	0.007 (0.020)	-0.025* (0.014)	-0.015 (0.018)	0.171 (0.018)	19.692***			
Panel C: Deals by Regions (Based on model with separated PR, FR and ER)															
AF	39	2.406 (1.469)	0.161 (0.108)	0.030 (0.056)	0.002 (0.021)	-0.578*** (0.142)	-0.019 (0.230)	0.005 (0.183)	-0.113 (0.072)	0.126 (0.094)	-0.072 (0.045)	0.038 (0.059)	0.428 (0.059)	3.841***	
AS	27	1.354 (1.735)	0.121 (0.171)	0.018 (0.070)	0.019 (0.025)	0.122 (0.436)	-1.000** (0.391)	0.583 (0.549)	0.058 (0.064)	-0.062 (0.110)	0.006 (0.073)	-0.053 (0.065)	-0.016 (0.065)	0.958	
AU	41	12.983 (12.321)	-0.258* (0.132)	0.225* (0.128)	-0.007 (0.032)	-1.939 (2.243)	0.021 (1.686)	-0.787 (1.653)	0.065 (0.085)	-0.015 (0.097)	-0.020 (0.066)	-0.009 (0.079)	0.008 (0.079)	1.032	
FSU	50	1.394 (1.287)	0.118*** (0.033)	0.031 (0.032)	0.011** (0.004)	-0.183 (0.263)	-0.009 (0.091)	-0.108* (0.065)	0.020 (0.022)	0.081*** (0.023)	0.006 (0.014)	0.009 (0.020)	0.406 (0.020)	4.343***	
GM	43	30.066 (10.244)	0.451** (0.187)	0.000 (0.081)	0.053** (0.025)	-5.889*** (1.819)	0.159 (0.507)	-1.801** (0.692)	0.184* (0.100)	0.189 (0.194)	0.044 (0.092)	0.034 (0.083)	0.245 (0.083)	2.360**	
ME	11	/	/	/	/	/	/	/	/	/	/	/	/	/	
NA	421	-1.491 (1.366)	0.071** (0.033)	0.050** (0.021)	0.002 (0.007)	0.558 (0.372)	-0.165 (0.155)	-0.028 (0.110)	0.162*** (0.020)	0.001 (0.028)	-0.047** (0.023)	-0.038 (0.041)	0.148 (0.041)	8.308***	
NS	52	3.472 (2.606)	0.102 (0.086)	0.041 (0.055)	0.016 (0.020)	-2.005*** (0.963)	-1.704** (0.669)	-0.219 (0.346)	0.170*** (0.050)	-0.047 (0.112)	-0.088 (0.055)	0.001 (0.053)	0.288 (0.053)	3.065***	
RE	5	/	/	/	/	/	/	/	/	/	/	/	/	/	
SA	37	1.684 (1.629)	-0.082 (0.090)	0.006 (0.065)	0.030* (0.018)	-0.821*** (0.282)	-0.191 (0.371)	-0.969** (0.402)	0.000 (0.064)	0.024 (0.073)	-0.082* (0.045)	-0.040 (0.055)	0.132 (0.055)	1.549	
Panel D: Deals by Oil Cycles (Based on model with separated PR, FR and ER)															
GL	580(Bull)	0.753 (0.332)	0.062** (0.030)	0.029* (0.018)	0.017*** (0.005)	-0.133*** (0.046)	0.075 (0.058)	-0.032 (0.068)	0.122*** (0.016)	0.013 (0.023)	-0.025 (0.016)	-0.015 (0.020)	0.173 (0.020)	13.081***	
GL	146(Bear)	0.071 (0.879)	0.115** (0.057)	0.009 (0.035)	0.024* (0.013)	-0.196* (0.117)	0.137 (0.160)	0.104 (0.257)	0.133*** (0.036)	0.010 (0.044)	-0.034 (0.033)	-0.067 (0.053)	0.192 (0.053)	4.456***	

Standard errors are put in parentheses. ***, **, * indicate 99%, 95%, and 90% significance level respectively
 Acronym: 'GL'-global, 'AF'-Africa, 'AS'-Asia, 'AU'-Australia, 'FSU'-Former Soviet Union, 'GM'-Gulf of Mexico, 'ME'-Middle East, 'NA'-North America, 'NS'-North Sea, 'RE'-Rest of Europe, 'SA'-South America
 Acronym: 'Reg'-region, 'Cons'-constant coefficient, 'Ln'-natural logarithm, 'OP'-oil price, 'GP'-gas price, 'Res'-reserve size, 'PR'-political risk, 'FR'-financial risk, 'ER'-economic risk, 'CR'-composite risk
 Acronym: 'Opct'-oil percent, 'Cpct'-cash percent, 'DT-S'-Deal Type = shares, 'BSO'-buyer's state ownership

Table 5: Regression Results of Bid Discount on Determinants (Part 2)

R/Y	Obs	Cons	LnOP	LnGP	LnRes	LnPR	LnFR	LnER	LnIEF	LnCR/ LnIEF	Opct	Cpct	DT-S	BSO	BT-C	Adj/R ²	F-stat
Panel E: Deals by Years (Based on model with separated PR, FR and ER)																	
2006	51	-2.450 (1.761)	0.266 (0.339)	0.371* (0.196)	0.051** (0.021)	-0.351 (0.278)	0.010 (0.263)	0.656 (0.529)	0.037 (0.073)	0.143* (0.080)	0.032 (0.052)	-0.056 (0.102)	0.032 (0.052)	-0.056 (0.102)	0.228	2.475**	
2007	123	1.934 (0.862)	0.078 (0.070)	-0.029 (0.182)	0.030*** (0.010)	-0.203** (0.110)	0.145 (0.119)	-0.328 (0.251)	0.097*** (0.032)	0.000 (0.046)	-0.032 (0.030)	-0.024 (0.044)	-0.032 (0.030)	-0.024 (0.044)	0.235	4.740***	
2008	99	0.281 (0.724)	-0.024 (0.109)	0.172 (0.130)	0.030** (0.013)	0.011 (0.122)	0.053 (0.139)	-0.061 (0.239)	0.160*** (0.032)	0.043 (0.043)	0.004 (0.034)	-0.024 (0.045)	0.004 (0.034)	-0.024 (0.045)	0.285	4.904***	
2009	102	1.296 (0.955)	-0.026 (0.103)	0.020 (0.134)	0.012 (0.012)	-0.081 (0.110)	-0.141 (0.158)	0.082 (0.185)	0.136*** (0.038)	0.019 (0.050)	-0.017 (0.039)	0.019 (0.052)	-0.017 (0.039)	0.019 (0.052)	0.113	2.281**	
2010	137	-0.230 (1.717)	0.063 (0.274)	0.026 (0.185)	0.022* (0.012)	-0.104 (0.162)	0.199 (0.250)	0.090 (0.319)	0.123*** (0.039)	-0.054 (0.066)	-0.115*** (0.043)	0.008 (0.047)	-0.115*** (0.043)	0.008 (0.047)	0.108	2.651***	
2011	116	-0.458 (1.253)	0.360** (0.165)	-0.045 (0.134)	-0.008 (0.013)	-0.392*** (0.122)	-0.164 (0.202)	-0.525** (0.247)	0.152*** (0.039)	0.036 (0.050)	-0.030 (0.037)	-0.060 (0.044)	-0.030 (0.037)	-0.060 (0.044)	0.223	4.300***	
2012	98	0.253 (1.145)	0.037 (0.189)	0.123 (0.113)	0.007 (0.014)	-0.142 (0.154)	-0.303* (0.181)	-0.092 (0.243)	0.132*** (0.042)	-0.008 (0.061)	-0.040 (0.047)	-0.033 (0.055)	-0.040 (0.047)	-0.033 (0.055)	0.209	3.561***	
Panel F: All Deals excluded Outliers by Bid Discount (Based on model with separated PR, FR and ER and China dummy)																	
GL	653	0.858 (0.225)	0.062*** (0.018)	0.013 (0.011)	0.014*** (0.004)	-0.127*** (0.032)	0.041 (0.041)	-0.026 (0.051)	0.081*** (0.011)	0.044*** (0.015)	-0.006 (0.011)	0.003 (0.015)	-0.006 (0.011)	0.003 (0.015)	0.184	14.348***	
Panel G: All Deals excluded Outliers by Bid Discount (Based on model with synthetic CR and China dummy)																	
GL	653	1.194 (0.238)	0.063*** (0.019)	0.013 (0.010)	0.015*** (0.004)				-0.194*** (0.050)	0.089*** (0.011)	0.041*** (0.015)	0.007 (0.015)	-0.004 (0.011)	0.032* (0.019)	0.172	16.024***	
Panel H: All Deals (Based on model with IEF)																	
GL	726	1.108 (0.207)	0.072*** (0.025)	0.023* (0.013)	0.015*** (0.005)				-0.187*** (0.037)	0.121*** (0.014)	0.004 (0.020)	0.004 (0.020)	-0.031** (0.014)	-0.030 (0.018)	0.187	21.738***	
Panel I: All Deals excluded Outliers by Bid Discount (Based on model with IEF and China dummy)																	
GL	653	0.906 (0.157)	0.063*** (0.019)	0.011 (0.010)	0.013*** (0.004)				-0.126*** (0.028)	0.079*** (0.011)	0.044*** (0.015)	0.006 (0.015)	-0.006 (0.011)	-0.003 (0.016)	0.176	16.337***	

Standard errors are put in parentheses. ***, **, * indicate 99%, 95%, and 90% significance level respectively
 Acronym: 'R/Y'—region/year, 'IEF'—overall score of *Index of Economic Freedom*, 'BT-C'—Buyer Type = China
 Outliers refer to deals with bid discount greater than 95th percentile or smaller than 5th percentile in the sample
 Results in Panel H and I are based on IEF instead of CR

Table 6: Deal Statistics and Bid Discounts (Total—Median, by Regions)

Primary Reserve Region	Total Deal Count	Total Reserve Size (MMBOE)	Total Deal Value (MMS)	Total Reserve Value (MMS)	Med Bid Price (\$/BOE)	Med Ask Price (\$/BOE)	Med B/A Spread (\$/BOE)	Med Bid Disc't (BOE)
Panel A: All 726 Deals in the Sample								
Africa	39(5.37%)	3,662.58(3.18%)	43,099.79(5.53%)	278,229.09(3.86%)	10.27	80.07	64.46	85.39%
Asia	27(3.72%)	2,297.24(1.99%)	23,652.71(3.04%)	124,624.75(1.73%)	8.90	62.19	54.66	85.12%
Australia	41(5.65%)	3,777.17(3.27%)	38,266.22(4.91%)	147,740.32(2.05%)	8.94	41.66	32.11	78.60%
Former Soviet Union	50(6.89%)	59,540.01(51.61%)	142,839.71(18.33%)	3,938,567.32(54.71%)	4.20	69.46	62.37	94.33%
GoM	43(5.92%)	4,858.56(4.21%)	54,720.20(7.02%)	289,678.08(4.02%)	15.33	63.83	52.96	76.51%
Middle East	11(1.52%)	1,788.51(1.55%)	9,841.26(1.26%)	158,923.23(2.21%)	7.29	74.24	62.06	85.66%
North America (non GoM)	421(57.99%)	28,179.90(24.43%)	364,623.75(46.80%)	1,572,286.91(21.84%)	12.39	57.02	41.55	76.21%
North Sea	52(7.16%)	6,033.29(5.23%)	57,460.47(7.38%)	332,794.37(4.62%)	10.26	61.39	46.91	81.05%
Rest of Europe	5(0.69%)	221.97(0.19%)	3,853.40(0.49%)	15,373.44(0.21%)	12.45	65.59	55.05	83.94%
South/Central America	37(5.10%)	4,995.35(4.33%)	40,762.67(5.23%)	341,307.13(4.74%)	9.38	69.09	56.76	84.24%
All	726(100.00%)	115,354.56(100.00%)	779,120.18(100.00%)	7,199,524.64(100.00%)	11.03	60.90	46.08	79.13%
Panel B: 42 Deals with Chinese Buyers								
Africa	6(14.29%)	1,203.00(10.37%)	16,090.57(16.63%)	85,466.70(10.38%)	15.45	76.10	57.27	81.31%
Asia	7(16.67%)	361.23(3.11%)	2,747.10(2.84%)	23,787.80(2.89%)	8.90	75.78	58.22	86.58%
Australia	6(14.29%)	1,155.12(9.95%)	7,082.10(7.32%)	35,273.31(4.29%)	6.11	25.94	20.29	77.70%
Former Soviet Union	4(9.52%)	1,751.07(15.09%)	5,798.66(5.99%)	123,006.99(14.95%)	2.65	71.12	68.47	96.26%
GoM	0	—	—	—	—	—	—	—
Middle East	3(7.14%)	938.00(8.08%)	3,291.30(3.40%)	98,164.81(11.93%)	14.62	89.81	74.26	82.68%
North America (non GoM)	6(14.29%)	3,612.73(31.13%)	33,617.74(34.75%)	285,123.21(34.64%)	8.99	84.25	75.26	89.37%
North Sea	2(4.76%)	467.88(4.03%)	5,797.00(5.99%)	28,810.17(3.50%)	12.14	62.59	50.44	74.18%
Rest of Europe	0	—	—	—	—	—	—	—
South/Central America	8(19.05%)	2,115.36(18.23%)	22,305.28(23.06%)	143,369.20(17.42%)	8.99	68.79	53.42	83.26%
All	42(100.00%)	11,604.39(100.00%)	96,729.75(100.00%)	823,002.20(100.00%)	8.56	72.63	57.86	85.24%
As % of all deals	5.79%	10.06%	12.42%	11.43%				
Panel C: 684 Deals with Non-Chinese Buyers								
Africa	33(4.82%)	2,459.58(2.37%)	27,009.22(3.96%)	192,762.39(3.02%)	10.00	80.07	66.32	86.57%
Asia	20(2.92%)	1,936.01(1.87%)	20,905.61(3.06%)	100,836.95(1.58%)	7.76	61.16	53.36	82.73%
Australia	35(5.12%)	2,622.05(2.53%)	31,184.12(4.57%)	112,467.01(1.76%)	9.18	45.30	34.55	78.60%
Former Soviet Union	46(6.73%)	57,788.94(55.70%)	137,041.05(20.08%)	3,815,560.32(59.84%)	4.41	67.89	61.49	94.22%
GoM	43(6.29%)	4,858.56(4.68%)	54,720.20(8.02%)	289,678.08(4.54%)	15.33	63.83	52.96	76.51%
Middle East	8(1.17%)	850.51(0.82%)	6,549.96(0.96%)	60,758.43(0.95%)	6.55	70.61	56.03	86.68%
North America (non GoM)	415(60.67%)	24,567.17(23.68%)	331,006.01(48.51%)	1,287,163.70(20.19%)	12.65	56.74	41.51	76.18%
North Sea	50(7.31%)	5,565.41(5.36%)	51,663.47(7.57%)	303,984.20(4.77%)	10.26	61.39	46.91	81.05%
Rest of Europe	5(0.73%)	221.97(0.21%)	3,853.40(0.56%)	15,373.44(0.24%)	12.45	65.59	55.05	83.94%
South/Central America	29(4.24%)	2,879.99(2.78%)	18,457.39(2.70%)	197,937.92(3.10%)	9.38	69.09	60.50	84.59%
All	684(100.00%)	103,750.17(100.00%)	682,390.43(100.00%)	6,376,522.44(100.00%)	11.22	59.88	45.58	78.77%
As % of all deals	94.21%	89.94%	87.58%	88.57%				

Table 7: Deal Statistics and Bid Discounts (Total—Average, by Regions)

Primary Reserve Region	Total Deal Count	Total Reserve Size (MMBOE)	Total Deal Value (MM\$)	Total Reserve Value (MM\$)	Avg Bid Price (\$/BOE)	Avg Ask Price (\$/BOE)	Avg B/A Spread (\$/BOE)	Avg Bid Disc't (BOE)
Panel A: All 726 Deals in the Sample								
Africa	39(5.37%)	3,662.58(3.18%)	43,099.79(5.53%)	278,229.09(3.86%)	13.22	78.93	65.72	82.67%
Asia	27(3.72%)	2,977.24(2.99%)	23,652.71(3.04%)	124,624.75(1.73%)	10.02	63.32	53.30	83.30%
Australia	41(5.65%)	3,277.17(3.27%)	38,266.22(4.91%)	147,740.32(2.05%)	10.80	48.26	37.46	75.10%
Former Soviet Union	50(6.89%)	59,540.01(51.61%)	142,839.71(18.33%)	3,938,567.32(54.71%)	4.78	67.19	62.41	92.64%
GoM	43(5.92%)	4,858.56(4.21%)	54,720.20(7.02%)	289,678.08(4.02%)	16.19	73.87	51.59	75.20%
Middle East	11(1.52%)	1,788.51(1.55%)	9,841.26(1.26%)	158,923.23(2.21%)	10.34	73.87	63.53	84.46%
North America (non GoM)	421(57.99%)	28,179.90(24.43%)	364,623.75(46.80%)	1,572,286.91(21.84%)	13.96	58.18	44.22	73.96%
North Sea	52(7.16%)	6,033.29(5.23%)	57,460.47(7.38%)	332,794.37(4.62%)	12.33	65.04	52.70	78.26%
Rest of Europe	5(0.69%)	221.97(0.19%)	3,853.40(0.49%)	15,373.44(0.21%)	15.55	72.85	57.30	78.65%
South/Central America	37(5.10%)	4,995.35(4.33%)	40,762.67(5.23%)	341,307.13(4.74%)	12.76	71.09	58.33	81.96%
All	726(100.00%)	115,354.56(100.00%)	779,120.18(100.00%)	7,199,524.64(100.00%)	12.87	61.60	48.73	77.11%
Panel B: 42 Deals with Chinese Buyers								
Africa	6(14.29%)	1,203.00(10.37%)	16,090.57(16.63%)	85,466.70(10.38%)	17.73	79.88	62.15	78.62%
Asia	7(16.67%)	361.23(3.11%)	2,747.10(2.84%)	23,787.80(2.89%)	11.22	70.52	59.30	83.65%
Australia	6(14.29%)	1,155.12(9.95%)	7,082.10(7.32%)	35,273.31(4.29%)	6.63	37.70	31.06	78.28%
Former Soviet Union	4(9.52%)	1,751.07(15.09%)	5,798.66(5.99%)	123,006.99(14.95%)	2.94	73.54	70.60	95.83%
GoM	0	0	0	0	/	/	/	/
Middle East	3(7.14%)	938.00(8.08%)	3,291.30(3.40%)	98,164.81(11.93%)	10.84	90.42	79.58	86.93%
North America (non GoM)	6(14.29%)	3,612.73(31.13%)	33,617.74(34.75%)	285,123.21(34.64%)	11.61	73.29	61.68	73.15%
North Sea	2(4.76%)	467.88(4.03%)	5,797.00(5.99%)	28,810.17(3.50%)	12.14	62.59	50.44	74.18%
Rest of Europe	0	0	0	0	/	/	/	/
South/Central America	8(19.05%)	2,115.36(18.23%)	22,305.28(23.06%)	143,369.20(17.42%)	14.48	67.36	52.88	79.79%
All	42(100.00%)	11,604.39(100.00%)	96,729.75(100.00%)	823,002.20(100.00%)	11.40	68.29	56.89	80.87%
As % of all deals	5.79%	10.06%	12.42%	11.43%				
Panel C: 684 Deals with Non-Chinese Buyers								
Africa	33(4.82%)	2,459.58(2.37%)	27,009.22(3.96%)	192,762.39(3.02%)	12.39	78.76	66.37	83.40%
Asia	20(2.92%)	1,936.01(1.87%)	20,905.61(3.06%)	100,836.95(1.58%)	9.60	60.80	51.20	83.17%
Australia	35(5.12%)	2,622.05(2.53%)	31,184.12(4.57%)	112,467.01(1.76%)	11.51	50.07	38.56	74.55%
Former Soviet Union	46(6.73%)	57,788.94(55.70%)	137,041.05(20.08%)	3,815,560.32(59.84%)	4.94	66.64	61.70	92.37%
GoM	43(6.29%)	4,858.56(4.68%)	54,720.20(8.02%)	289,678.08(4.54%)	16.19	67.78	51.59	75.20%
Middle East	8(1.17%)	850.51(0.82%)	6,549.96(0.96%)	60,758.43(0.95%)	10.16	67.67	57.51	83.53%
North America (non GoM)	415(60.67%)	24,567.17(23.68%)	331,006.01(48.51%)	1,287,163.70(20.19%)	13.99	57.96	43.97	73.97%
North Sea	50(7.31%)	5,565.41(5.36%)	51,663.47(7.57%)	303,984.20(4.77%)	12.34	65.13	52.79	78.42%
Rest of Europe	5(0.73%)	221.97(0.21%)	3,853.40(0.56%)	15,373.44(0.24%)	15.55	72.85	57.30	78.65%
South/Central America	29(4.24%)	2,879.99(2.78%)	18,457.39(2.70%)	197,937.92(3.10%)	12.29	72.12	59.83	82.56%
All	684(100.00%)	103,750.17(100.00%)	682,390.43(100.00%)	6,376,522.44(100.00%)	12.96	61.19	48.23	76.88%
As % of all deals	94.21%	89.94%	87.58%	88.57%				

Table 8: Risk, Cash Payment and Buyer's State Ownership (Median, by Regions)

Primary Reserve Region	Total Deal Count	Med ICRG PR (Pts)	Med ICRG FR (Pts)	Med ICRG ER (Pts)	Med ICRG CR (Pts)	Med Cash Payment (%)	Med BSO (%)
Panel A: All 726 Deals in the Sample							
Africa	39	56.00	41.75	34.92	66.98	100.00	0.00
Asia	27	60.33	40.13	37.54	68.17	100.00	0.00
Australia	41	87.17	33.38	39.63	78.52	100.00	0.00
Former Soviet Union	50	66.00	45.13	39.54	73.44	100.00	50.00
GoM	43	81.21	33.08	36.00	75.96	100.00	0.00
Middle East	11	57.42	42.38	32.46	64.35	100.00	0.00
North America (non GoM)	421	83.63	35.54	38.58	76.25	100.00	0.00
North Sea	52	82.35	39.92	39.50	80.63	100.00	0.00
Rest of Europe	5	79.04	37.88	38.83	76.31	100.00	0.00
South/Central America	37	62.17	39.92	37.00	68.79	100.00	0.00
All	726	81.79	36.50	38.13	76.25	100.00	0.00
Panel B: 42 Deals with Chinese Buyers							
Africa	6	58.44	43.08	37.13	68.23	100.00	75.84
Asia	7	60.92	47.92	39.67	74.27	100.00	86.20
Australia	6	82.13	33.58	38.00	77.34	100.00	81.02
Former Soviet Union	4	70.60	36.40	39.73	73.89	100.00	87.92
GoM	0	/	/	/	/	/	/
Middle East	3	57.50	40.42	30.42	65.15	100.00	100.00
North America (non GoM)	6	87.69	39.75	38.83	83.03	100.00	86.20
North Sea	2	82.46	41.90	39.92	82.14	96.54	87.92
Rest of Europe	0	/	/	/	/	/	/
South/Central America	8	64.00	39.52	37.00	70.06	100.00	87.92
All	42	67.81	39.79	38.00	74.34	100.00	86.20
Panel C: 684 Deals with Non-Chinese Buyers							
Africa	33	55.83	41.42	34.92	66.54	100.00	0.00
Asia	20	59.75	40.08	37.50	68.13	100.00	0.00
Australia	35	87.17	33.38	40.42	80.48	100.00	0.00
Former Soviet Union	46	66.00	45.13	39.54	73.44	100.00	39.68
GoM	43	81.21	33.08	36.00	75.96	100.00	0.00
Middle East	8	50.00	42.85	36.58	60.54	75.00	0.00
North America (non GoM)	415	83.63	35.54	38.58	76.25	100.00	0.00
North Sea	50	82.35	39.92	39.50	80.63	100.00	0.00
Rest of Europe	5	79.04	37.88	38.83	76.31	100.00	0.00
South/Central America	29	61.17	39.92	37.04	68.79	100.00	0.00
All	684	81.79	36.50	38.33	76.25	100.00	0.00

significance level of each variable for different regions, the general causal relationship between bid discount and determinants are highly consistent with those in Panel A. There is only one exception that in Australia, bid discount was negatively correlated with oil price while in Panel A such relationship was positive. It is notable that for some regions like Africa and Former Soviet Union, only one of three risk factors were significant, while for some other regions such as Gulf of Mexico and North Sea, several risk categories were significant simultaneously. For most regions, political risk was one of the key factors driving bid discount.

In Panel D Table 5, we use another variation, an oil cycle indicator to control for macroeconomic cycles. It is shown that out of total 726 deals for the period 2006 to 2012, 580 were conducted in oil bull period and 146 in bear cycle. We run regression for each group respectively, results show highly consistent causal relationship between both bull and bear cycles, and also consistent with those in Panel A. In Panel E Table 5, we further run the regression on calendar year basis to test possible time fixed-effects. Results are in general consistent with Panel D as well as Panel A. Risk

Table 9: Risk, Cash Payment and Buyer's State Ownership (Average, by Regions)

Primary Reserve Region	Total Deal Count	Avg ICRG PR (Pts)	Avg ICRG FR (Pts)	Avg ICRG ER (Pts)	Avg ICRG CR (Pts)	Avg Cash Payment (%)	Avg BSO (%)
Panel A: All 726 Deals in the Sample							
Africa	39	55.81	42.20	35.75	66.88	90.84	27.08
Asia	27	60.64	42.06	37.33	70.01	88.85	25.61
Australia	41	85.81	33.37	39.36	79.27	82.07	22.33
Former Soviet Union	50	66.43	41.69	38.92	73.52	86.78	41.07
GoM	43	81.11	33.44	36.73	75.64	94.02	10.37
Middle East	11	56.50	41.89	34.93	66.66	68.05	27.94
North America (non GoM)	421	83.17	35.95	37.52	78.32	79.30	3.63
North Sea	52	83.33	42.15	39.97	82.73	93.57	18.48
Rest of Europe	5	78.52	37.34	37.45	76.65	80.00	40.00
South/Central America	37	61.90	39.91	36.75	69.28	85.55	27.94
All	726	78.23	37.36	37.67	76.63	82.99	12.66
Panel B: 42 Deals with Chinese Buyers							
Africa	6	54.38	43.77	35.60	66.87	91.93	71.25
Asia	7	63.10	44.85	39.42	73.68	85.71	66.01
Australia	6	83.59	33.53	38.67	77.90	88.32	81.02
Former Soviet Union	4	70.64	36.88	38.67	73.09	100.00	68.96
GoM	0	/	/	/	/	/	/
Middle East	3	58.83	40.78	30.29	64.95	99.50	91.95
North America (non GoM)	6	87.53	39.61	38.90	83.02	94.89	87.35
North Sea	2	82.46	41.90	39.92	82.14	96.54	87.92
Rest of Europe	0	/	/	/	/	/	/
South/Central America	8	64.77	40.91	36.92	71.30	99.06	87.92
All	42	69.92	40.39	37.52	73.91	95.12	79.30
Panel C: 684 Deals with Non-Chinese Buyers							
Africa	33	56.07	41.91	35.78	66.88	90.64	19.05
Asia	20	59.78	41.08	36.60	68.73	89.94	11.47
Australia	35	86.19	33.34	39.47	79.50	79.28	12.27
Former Soviet Union	46	66.06	42.11	38.94	73.56	85.63	38.64
GoM	43	81.11	33.44	36.73	75.64	94.02	8.61
Middle East	8	55.63	42.31	36.67	67.30	56.25	3.94
North America (non GoM)	415	83.10	35.90	37.50	78.25	79.07	2.00
North Sea	50	83.37	42.17	39.97	82.75	93.45	15.70
Rest of Europe	5	78.52	37.34	37.45	76.65	80.00	40.00
South/Central America	29	61.11	39.64	36.70	68.72	81.82	20.07
All	684	78.74	37.17	37.68	76.79	82.25	8.57

metric loadings record significantly negative correlation with bid discount, while both reserve size and oil percentage lead to higher bid discount.

For both Panel F and G of Table 5, we include the China dummy variable in the regression. Results in Panel F are based on separated PR, FR and ER scores (as we did in Panel A), and results in Panel G are based on the synthetic CR score (as we did in Panel B). Both coefficients indicate significantly positive correlation between China dummy and bid discount. In particular, Panel F reveals a 4 percent discount gap between Chinese and non-Chinese buyers, and for Panel G the gap is 3.2 percent.

In Panel H Table 5, we run regression using IEF as instrumental variable for the ICRG risk metrics. IEF focuses on four key aspects of the economic environment over which governments typically exercise policy control: rule of law, government size, regulatory efficiency, and market openness. In assessing conditions in these four categories, the Index measures 12 specific components of economic freedom, scores on these 12 components are then equally weighted and averaged

to produce an overall economic freedom score for each economy. It is clear showing that all the results based on IEF score are highly consistent with previous panels. It is notable that higher IEF score indicate higher economic freedom, which can be translated into a lower risk level. Therefore the negative loading for IEF is consistent with our expectation, i.e. higher IEF leading to lower bid discount. In Panel I Table 5, we add the China dummy variable based on IEF, results are also consistent with previous panels. In particular, based on IEF, the bid discount gap between Chinese and non-Chinese buyers is 3.6 percent.

As a reminder, when we include the China dummy in the regression models, we encounter an outlier issue. As shown in Table 1, the PetroChina deal on Feb 9, 2011 recorded an extraordinary low bid discount 10.78 percent comparing to other deals in the group. We therefore exclude this deal, as well as others with bottom or top 5th percentiles bid discount from our sample for the China dummy regressions. It is notable that although significant in the group comparison results in Table 3, buyer's state ownership shows little explanatory power for bid discount in all circumstances in Table 5. The reason is probably for the lack of variation in BSO value in our sample. Most deals in our sample were conducted by international oil companies (IOCs), and most IOCs had zero state ownership, leading to about 85 percent of BSO values in our sample equal to zero (see Table 4). Conversely, the risk factors are consistently justified to be the driving force behind the deal bid discount.

Results provide clear insights into reasons for regional risk underpinning discounts on acquisitions in the industry. It also suggest a methodology for evaluating whether the risk of entering these high risk regions is outweighed by benefits. To illustrate at a more granular level, the high risk stakes in the global energy: Sinopec's take-up of a \$1.5 billion stake in an Angolan oilfield and CNPC's acquisition of a \$4.2 billion share of a Mozambican gas field along with Chevron's acquisition of 80 percent interest in two blocks in the Kurdistan Region are deals which on the face of it, contradict traditional risk management. However we demonstrate that when deals are weighted on a risk-to-potential return basis, they make energy security and commercial sense. This dual finding is in support of a previously held standpoint proposed by Li and Liang (2012) which suggests political leverage may be the major reason for Chinese capability for investing in risky regions. In fact, by analyzing the sample, we find that risk weighted basis investments and acquisitions also make stand-alone economic sense in capital markets.

5. CONCLUSION AND POLICY IMPLICATIONS

For global competitors the energy outlook for 2018 and beyond is changing. China's financial advantages may be diminishing; Forex reserves are down to 3 trillion from 4 trillion. The cost of funds for China are increasing (Meidan, 2016) and the Chinese currency is losing strength against the dollar (Hughes and Blitz, 2016). Each of these are important in the dollar denominated commodity sector. However, it seems clear that while Chinese energy companies may continue to expand their acquisitive policy, international companies will need to increase their bid prices to compete and counter offer for oil and gas assets.

Our results show China has been winning by outbidding in risky areas, particularly where a willingness to take on the risks of opening new exploration provinces has been backed by oil for loans (Sun et al., 2014). It is clear that one sustainable Chinese advantage has been their willingness to take on risky markets, it may be that China is using diplomacy to neutralise these risks, but that would require further research. Consequently, risky provinces seemed not to hold the same fear for China as for other bidders.

In addition to the signs of a policy and strategy shift, findings from this study have both theoretical and practical industry application. We propose a risk and size adjusted metric to measuring

bid ask premia or discount in the context of global oil and gas deals. In particular, where reserves which support the discount are proven and probable, the appeal of our methodology is its straightforwardness for measuring discount in oil and gas—relative to country risk profile. The approach proposed in this paper is both intuitive, methodological and pragmatic, which demonstrates that while risk often deserves a hefty discount, the policy question for global investor is now whether “the country risk is worth the discount”. Certainly the exuberance of early Chinese dealmaking has ended, in its place we find evidence of global deal-makers capable of closing favourable global terms. At the same time, China has been pragmatic enough to close sensible deals that seem to make sense on a risk-to-reward basis.

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